

a first layer of organic polymer deposited contiguous to the conductive barrier material.

40. (New) A composite structure comprising:
a display structure further comprising:
a substrate;
a first layer of organic polymer deposited over the substrate; and
a first transparent layer of conductive barrier material deposited contiguous to the first organic polymer layer, the conductive barrier material being selected from the group consisting of a conductive oxide, a metal and a metal nitride.

41. (New) The composite structure of claim 39 further comprising a second layer of organic polymer deposited over the plastic substrate, in between the substrate and the conductive barrier layer.

42. (New) The composite structure of claim 40 further comprising a second layer of organic polymer deposited over the conductive barrier layer.

43. (New) The composite structure of claim 39 further comprising a second layer of conductive barrier material deposited over the first organic polymer layer, the second layer of conductive barrier material having the same composition as the first conductive barrier material.

44. (New) The composite structure of claim 39 further comprising multiple layers deposited over the first organic polymer layer, wherein said layers alternate between an additional conductive barrier material layer and a transparent layer selected from the group consisting of a layer of organic polymer, a layer of dielectric, a layer of metal and a layer of conductive oxide.

45. (New) The composite structure of claim 39 wherein the conductive barrier material is selected from the group consisting of aluminum, copper, silver, gold, a silver alloy and a gold alloy.

46. (New) The composite structure of claim 39 wherein the plastic substrate is selected from the group consisting of a polyester and a polyolefin.

47. (New) The composite structure of claim 39 wherein the conductive barrier material is tin doped indium oxide.

48. (New) The composite structure of claim 39 wherein the display structure further comprises a first transparent dielectric barrier layer comprised of a material selected from the group consisting of metal oxides and metal nitrides.

49. (New) The composite structure of claim 39 wherein the display structure further comprises multiple transparent layers that alternate between a layer of crosslinked organic monomer and a layer of conductive oxide.

50. (New) A process for fabricating a composite structure comprising:
providing a substrate;
depositing a first transparent layer of conductive barrier material over the substrate, the conductive barrier material being selected from the group consisting of a conductive oxide, a metal and a conductive metal nitride; and
depositing a first organic polymer layer contiguous to the first conductive barrier layer; wherein said composite structure comprises a display structure.

51. (New) The process of claim 50 wherein the dielectric layer is deposited by a plasma assisted chemical vapor deposition process.

52. (New) The process of claim 50 further comprising depositing a second layer of organic polymer over the substrate, in between the substrate and the first layer of conductive barrier material.

53. (New) The process of claim 52 further comprising depositing a second layer of conductive barrier material over the first organic polymer layer, the second layer of conductive barrier material having the same composition as the first layer of conductive barrier material.

54. (New) The process of claim 52 further comprising depositing multiple layers over the first organic polymer layer, wherein said layers alternate between an additional conductive barrier material layer and a transparent layer selected from the group consisting of a layer of organic polymer, a layer of dielectric, a layer of metal and a layer of conductive oxide.

55. (New) The process of claim 50 further comprising depositing an additional layer of conductive barrier material over the first organic polymer layer, the additional layer of conductive barrier material having the same composition as the first layer of conductive barrier material.

56. (New) The process of claim 50 further comprising depositing multiple layers over the first organic polymer layer, wherein said layers alternate between an additional conductive barrier material layer and a transparent layer selected from the group consisting of a layer of organic polymer, a layer of dielectric, a layer of metal and a layer of conductive oxide.

57. (New) The process of claim 50 further comprising depositing, polymerizing and crosslinking an organic monomer in either a vacuum or a plasma to form the polymer layer.

58. (New) The process of claim 50 wherein the substrate is a plastic substrate, the process further comprising smoothing the plastic substrate by depositing a polymer over the substrate by a liquid coating method.

59. (New) The process of claim 50 wherein the first conductive barrier layer has an inner surface in contact with the substrate and an outer surface, further comprising depositing the polymer layer over the outer surface of the first conductive barrier layer before the outer surface of the first conductive barrier layer contacts another surface.

60. (New) The process of claim 50 further comprising depositing a transparent layer of a first dielectric barrier material comprised of a material selected from the group consisting of metal oxides and metal nitrides.

61. (New) The process of claim 50 wherein the conductive oxide is made by a first step comprising thermal evaporation, electron beam evaporation or sputtering of a metal followed by a second step comprising converting the metal to an oxide by exposing the metal to an oxygen containing plasma.

62. (New) The process of claim 50 wherein the conductive barrier layer is a conductive oxide layer deposited by a plasma assisted chemical vapor deposition process.

63. (New) The process of claim 50 wherein the conductive barrier layer is a metal layer deposited by either vacuum metallizing or sputtering.

64. (New) The process of claim 50 wherein the conductive barrier layer is a conductive oxide layer deposited by sputtering.

65. (New) The process of claim 64 wherein the sputtering deposition of the conductive oxide layer is carried out in a plasma comprising hydrogen gas.

66. (New) The composite structure of claim 39 wherein the conductive barrier material is a conductive oxide containing indium.

67. (New) The composite structure of claim 39 further comprising one or more additional layers of conductive barrier material deposited over the plastic substrate, the additional layers of conductive barrier material having a composition different from that of the first layer of conductive barrier material.

68. (New) The composite structure of claim 48 wherein the metal oxide is at least one metal oxide selected from the group consisting of an oxide of silicon, an oxide of titanium and an oxide of aluminum.

69. (New) The composite structure of claim 41 further comprising multiple transparent layers that alternate between a layer comprising crosslinked organic polymer and a layer comprising a conductive oxide.

70. (New) The process for forming the composite structure of claim 50 wherein the metal oxide is made by thermal evaporation, electron beam evaporation or sputtering of a metal in the presence of oxygen.

71. (New) The process for forming the composite structure of claim 50 wherein the metal nitride is made by thermal evaporation, electron beam evaporation or sputtering of a metal in the presence of nitrogen.

72. (New) The process for forming the composite structure of claim 53 wherein the dielectric layer is deposited by sputtering.

73. (New) The composite structure of claim 1 wherein a display medium is between two dyads each comprising a layer of organic polymer material contiguous to a layer of conductive barrier material.

74. (New) The composite structure of claim 73 further comprising one or more additional dyad, each additional dyad comprising an additional conductive barrier material layer and a transparent layer selected from the group consisting of a layer of organic polymer, a layer of dielectric, a layer of metal and a layer of conductive oxide.

75. (New) The composite structure of claim 40 wherein a display medium is between two dyads each comprising a layer of organic polymer material contiguous to a layer of conductive barrier material.

76. (New) The composite structure of claim 75 further comprising one or more additional dyad, each additional dyad comprising an additional conductive barrier material layer and a transparent layer selected from the group consisting of a layer of organic polymer, a layer of dielectric, a layer of metal and a layer of conductive oxide.

77. (New) The process for fabricating a composite structure of claim 50 wherein a display medium is placed between two dyads each comprising a layer of organic polymer material contiguous to a layer of conductive barrier material.